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UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/163,089	09/29/98	MCKENZIE I	4102-1

022442
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HM12/1023

EXAMINER	
ZEMAN, R	
ART UNIT	PAPER NUMBER
1645	20

DATE MAILED: 10/23/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/163,089	MCKENZIE ET AL.	
	Examiner	Art Unit	
	Robert A Zeman	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 August 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-17,19-22,24-46,48-51 and 70* is/are pending in the application.

4a) Of the above claim(s) *2,22,24,25,27-37,39-46 and 48-51* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1,3-17,19-21,26,38 and 70* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) *1-17,19-22,24-46,48-51 and 70* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

The amendment filed 5-14-2001 is acknowledged. Claims 1, 27 and 38 have been amended. Claim 70 has been added.

Election/Restrictions

Applicant's election with traverse of Group I (claims 1, 3-17, 19-21, 24-26, 38 and 70) and the species election of MUC1 (without traverse)in Paper No. 19 are acknowledged. The traversal is on the ground(s) that:

1. A thorough search of Group I would include the subject matter of Groups II-V.

2. Group V is a method of making the products in Groups I-V and should be rejoined to these groups.

3. Claim 1 has already been searched and examined and no art has been cited.

4. Groups I-IV are closely related and a careful search of the common feature (mannose) would be sufficient to examine said groups.

5. Group V is a product by process of groups I-IV

6. The invention of Group VI is essentially a method of making the inventions of Groups I-IV and could be searched without any undue burden.

This is not found persuasive because the searches of the various groups would not be coextensive in scope.

The requirement is still deemed proper and is therefore made FINAL.

Additionally, it should be noted that the Examiner was confused by Applicant's assertion that the first and third restrictions requirements were made by the same examiner. The first restriction was made by Mary Zeman while the third was made by Robert Zeman.

Upon further consideration, the claims of Groups I and II will be rejoined. Currently, claims 1-17, 19-22, 24-46, 48-51 and 70 are pending. Claims 2, 22, 27-37, 39-46 and 48-51 have been withdrawn from consideration. Claims 1, 3-17, 19-21, 24-26, 38 and 70 are currently under examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-17, 19-21, 24-26, 38 and 70 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for immunoregulatory compositions comprising mannose receptor-bearing cells and a conjugate comprising **MUC1** (antigen) and a **fully oxidized mannose polymer** (carbohydrate), does not reasonably provide enablement for immunoregulatory compositions comprising mannose receptor-bearing cells and a conjugate comprising **any other antigen** and/or **any other carbohydrate polymer**. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.
The rejected claims are drawn to compositions that are to be applied to animals/humans. People of skill in the art require documented factual evidence, that a benefit can be derived by the therapeutic application of a given substance. The specification provides ample factual evidence

those compositions comprising mannose receptor-bearing cells and a conjugate comprising **MUC1** and **fully oxidized mannose polymer** (Ox-M-FP) can be used to treat increase cytotoxic T cell response to MUC1. However, the instant specification fails to provide direction on what antigens, other than MUC1, and/or what carbohydrate polymers, other than fully oxidized mannose, are capable of eliciting a therapeutic response or that a given response would be beneficial to the treated subject. Applicant has failed to give direction on what conjugates, other than those comprised of MUC1 and fully oxidized mannose (Ox-M-FP), would meet the limitations of the claims and has provided no evidence that any benefit to the treated subject would be obtained. Given the lack of success in the art, the lack of working examples, and the unpredictability of the generation of a therapeutic response in a living organism, the specification, as filed, is not enabling for the use of **all** antigens or any carbohydrate polymer other than fully oxidized mannose to modify (regulate) an immune response.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-17, 19-21, 24-26, 38 and 70 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 20 and 70 are rendered vague and indefinite by the use of the term "immunoregulatory". Regulates the immune system in what way? Does it stimulate it or suppress it? What component of the immune system is affected? Antibody production? NK cells? T-cells?

B-cells? Dendritic cells? As written, it is impossible to determine the metes and bounds of the claimed invention.

Claims 1, 38 and 70 are rendered vague and indefinite as they are drawn, in part, to a non-elected invention. The instant invention is drawn to a composition comprising a polymer with **fully oxidized** mannose. Said claims list as a member of a Markush group a polymer with **partially reduced** mannose which is drawn to a non-elected invention. As such the Markush language recited in said claims is improper.

Claim 8 is rendered vague and indefinite by the use of the term "contacted". It is unclear what is meant by said term. What constitutes "contact"? For what duration? Under what conditions? As written, it is impossible to determine the metes and bounds of the claimed invention.

Claim 9 is rendered vague and indefinite by the use the term "capable of". Said term conveys the capacity to do something. It is unclear whether that capacity is utilized or not. Hence it is impossible to determine the metes and bounds of the claimed invention.

Claim 15 is rendered vague and indefinite by the use of the term "**the** repeated subunits". To which repeated subunits is Applicant referring? What constitutes a repeated subunit? As written, it is impossible to determine the metes and bounds of the claimed invention.

Claim 17 recites improper Markush language. Said Markush group contains two conjunctions (and) making it impossible to determine the members of said group.

Claim 20 is rendered vague and indefinite by the use the term "can be". Said term conveys the capacity to do something. It is unclear whether that capacity is utilized or not. Hence it is impossible to determine the metes and bounds of the claimed invention.

Claim 20 is rendered vague and indefinite by the use of the term "antigen delivery medium" It is unclear what is meant by said term. Is the medium cell culture medium containing the antigen or some other "medium". Does the medium contain the antigen or is it merely a delivery mechanism? As written, it is impossible to determine the metes and bounds of the claimed invention.

Claim 24 is rendered vague and indefinite by the use of the term "in the presence of". It is unclear what is meant by said term. Does there have to be interaction between the modifiers and the cells? If so what type of interaction must take place and under what conditions?

Claim 24 does not further limit the claim on which it depends. Claim 20, on which said claim depends, recites the limitation of "culturing" cells. This is interpreted as being done *in vitro*. Therefore said claim does not further limit claim 20.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-17, 19-21, 24-26, 38 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Apostolopoulos et al. (PNAS Vol. 92, pages 10128-10132) in view of Koning et al. (WO 98/13378).

The aforementioned claims are based on **immunoregulatory** compositions. This limitation was not disclosed or enabled in the parent application. Consequently, Apostolopoulos et al. is available under 35 U.S.C. 102(b).

The instant claims are drawn to immunoregulatory compositions comprising mannose receptor-bearing cells and a conjugate comprising an antigen (MUC1) and a carbohydrate polymer (fully oxidized mannose). Apostolopoulos et al. disclose a fusion protein (conjugate) comprising an antigen and a carbohydrate polymer that is used to augment the induction of CD8+ cytotoxic T cells (see abstract and pages 1028-1029). Apostolopoulos et al. further disclose a fusion protein which consists of the MUC1 antigen and a fully oxidized mannose polymer (Ox-M-FP). Apostolopoulos et al. differs from the instant claims in that the Ox-M-FP is fusion protein is not combined with mannose receptor-bearing cells. Koning et al. disclose the use of mannosylated antigens to enhance the uptake and MHC restricted presentation of such antigens by mannose receptor bearing cells (see abstract). Consequently, it would have been obvious to one of skill in the art to combine the Ox-M-FP conjugate disclosed by Apostolopoulos et al. with mannose receptor bearing cells as disclosed by Koning et al. since targeting a mannose receptor increases the uptake efficiency of an antigen and its presentation by antigen presenting cells resulting in an increased ability to induce T-cells (see Koning et al. page

5). One would have had a high expectation of success since Koning et al. teach that the mannosylation of a variety of peptides and proteins led to an increased ability to induce a T-cell response.(see pages 15-19 and Table 1).

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A Zeman whose telephone number is (703) 308-7911. The examiner can normally be reached on M-Th 7:30 am - 5:00 pm and Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, Donna Wortman, Primary Examiner can be reached on (703) 308-1032. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 for regular communications and (703) 308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

Robert A. Zeman
October 22, 2001

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